

Abstract Submitted
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Enhanced stability beyond the neutron drip-line near the third peak of r -process nucleosynthesis in the deformed relativistic Hartree-Bogoliubov theory M.M. SHARMA, A.R. FARHAN, Kuwait University — We have investigated the shell structure of nuclei in the region of the r -process path beyond $N = 126$. Employing the framework of the relativistic Hartree-Bogoliubov theory in deformed space, ground-state properties of nuclei with $Z = 58 - 68$ in the highly neutron-rich region beyond $N = 126$ have been explored. It is shown that in approaching the r -process path above $N = 126$, nuclei in several isotopic chains ($Z > 60$) exhibit enhanced stability. This shifts the expected drip line significantly farther into the neutron-rich region. A large number of nuclides near the r -process path are shown to exhibit a coexistence of well-deformed prolate and oblate shapes in the ground state. Consequences of the enhanced stability and the shape coexistence on the r -process nucleosynthesis will be discussed.

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